BOYLE'S LAW
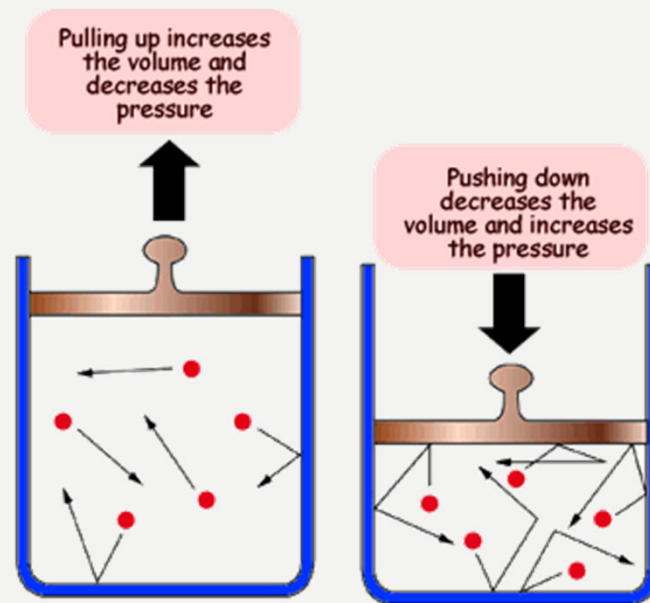
NOTES

BOYLE'S LAW

- Pressure and volume have an inverse relationship
  - This means as one variable increases, the other decreases

Pulling up increases the volume and decreases the pressure

Pushing down decreases the volume and increases the pressure

In the smaller space the particles suffer more collisions with the walls of the container - it is this that we measure as 'pressure exerted by the gas'.

BOYLE'S LAW GRAPHICALLY

- P x V = constant
- Why does the graph have a curved line?
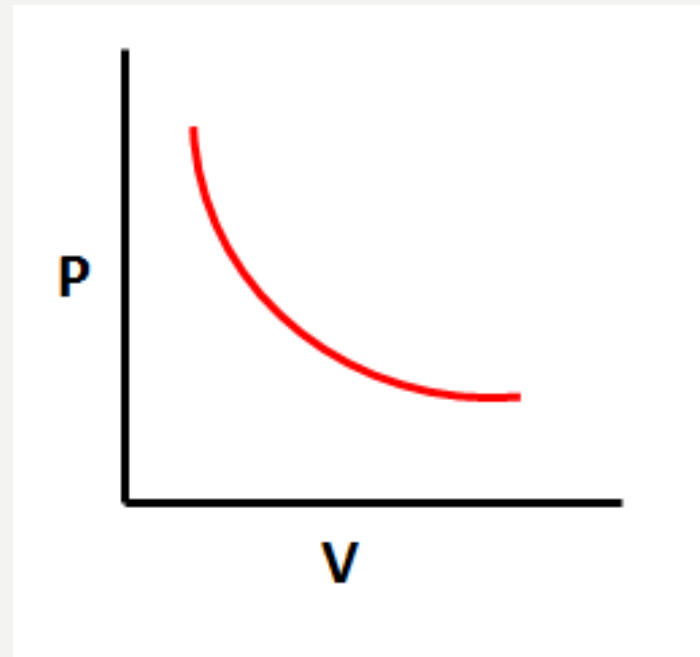
BOYLE'S LAW MATHEMATICALLY

- $P_1V_1 = P_2V_2$

- Example Problem:

What pressure is required to compress 196.0 liters of air at 1.00 atmosphere into a cylinder whose volume is 26.0 liters?

BOYLE'S LAW: SOLVED

- What pressure is required to compress 196.0 liters of air at 1.00 atmosphere into a cylinder whose volume is 26.0 liters? (from previous slide)

- P_1 = 1 atm

- V_1 = 196 L

- P_2 = ?

- V_2 = 26 L

$P_1V_1 = P_2V_2$

$1 \times 196 = P_2 \times 26$

$196 = P_2 \times 26$

$P_2 = 7.5$ atm